Notice No. 7 (Corrigenda)

Rules and Regulations for the Classification of Ships, July 2013

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. All corrigenda included in the Notice are effective immediately.

Issue date: January 2014

Amendments to	Effective date
Part 3, Chapter 9, Section 3	Corrigenda
Part 3, Chapter 10, Sections 2 & 5	Corrigenda
Part 4, Chapter 2, Section 8	Corrigenda
Part 6, Chapter 1, Section 3	Corrigendum
Part 6, Chapter 2, Sections 1, 5, 7 & 9	Corrigenda
Part 7, Chapter 11, Section 3	Corrigendum
Part 7, Chapter 15, Section 1	Corrigendum

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Part 3, Chapter 9

Special Features

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■ *Section 3*
Decks loaded by wheeled vehicles

3.4 Deck plating

Table 9.3.1 Deck plate thickness calculation

Symbols	Expression
a, s, u, and *v* as defined in Fig. 9.3.1 n = tyre correction factor, *see* Table 9.3.3 P_w = load, in tonnes, on the tyre print. For closely spaced wheels the shaded area shown in Fig. 9.3.1 may be taken as the combined print P_1 = corrected patch load, in tonnes λ = dynamic magnification factor ϕ_1 = patch aspect ratio correction factor ϕ_2 = panel aspect ratio correction factor ϕ_3 = wide patch load factor	$P_1 = \phi_1 \phi_2 \phi_3 \lambda P_w$
	$\phi_1 = \dfrac{2v_1 + 1{,}1s}{u_1 + 1{,}1s}$ $v_1 = v$, but ~~$>$~~ $\leq s$ $u_1 = u$, but ~~$>$~~ $\leq a$
	$\phi_2 = 1{,}0$ for $u \leq (a - s)$ $= \dfrac{1}{1{,}3 - \dfrac{0{,}3}{s}(a - u)}$ for $a \geq u > (a - s)$ $= 0{,}77\dfrac{a}{u}$ for $u > a$
	$\phi_3 = 1{,}0$ for $v < s$ $= 0{,}6\dfrac{s}{v} + 0{,}4$ for $1{,}5 > \dfrac{v}{s} \geq 1{,}0$ $= 1{,}2\dfrac{s}{v}$ for $\dfrac{v}{s} \geq 1{,}5$
	λ = 1,25 for harbour conditions = $(1 + 0{,}7n)$ for sea-going conditions

Part 3, Chapter 10

Welding and Structural Details

CORRIGENDA

■ *Section 2*
Welding

2.2 Fillet welds

2.2.2 Where double continuous fillet welding is proposed, the throat thickness is to be determined taking $\left(\dfrac{d}{s}\right)$ equal to 1,0.

2.2.3 The leg length of the weld is to be not less than $\sqrt{2}$ ~~×~~ times the specified throat thickness.

■ *Section 5*
Structural details

5.6 Bilge keels and ground bars

5.6.4 The material class, grade and quality of the ground bar are to be in accordance with Table 2.2.1, Note ~~11~~ 9 in Chapter 2.

Part 4, Chapter 2

Ferries, Roll on-Roll off Ship and Passenger Ships

CORRIGENDA

■ *Section 8*

Bow doors and inner doors

8.6 Design of securing and supporting devices

Table 2.8.1 Combination of external loads

Bow door type	Combination of external loads	
	Case 1 (Head seas)	Case 2 (Quartering seas)
Visor doors, *see* Notes 1 and 2	P_x and P_z, *see* Note 3	0,7P_y acting on each side separately, together with 0,7P_x and 0,7P_z
Side opening, *see* Notes 1 and 2	P_x, P_y and P_z acting on both doors, *see* Note 3	0,7P_x and 0,7P_z acting on both doors and 0,7P_y acting on each door separately

NOTES

1. P_x, P_y and P_z are defined in ~~8.5.15~~ 8.6.1. These forces are to be applied at the centroid of the projected areas.
2. The self-weight of the door is to be included in the combination of external loads.
3. The Case 1 forces are generally to give rise to a zero moment about the transverse axis through the centroid of area ~~A_y~~ A_x, *see* Fig. 2.8.1.

Part 6, Chapter 1

Control Engineering Systems

CORRIGENDUM

■ *Section 3*

Ergonomics of control stations

3.6 Displays

3.6.3 The symbols used in mimic diagrams for the services listed in Pt 6, Ch 2,~~1.5.1~~ 1.6.1 are to be consistent across all displays.

Part 6, Chapter 2

Electrical Engineering

CORRIGENDA

■ *Section 1*

General requirements

1.3 Documentation required for supporting evidence

1.3.4 Arrangement plans of main and emergency switchboards, section boards and documentation that demonstrates that creepage and clearance distances are in accordance with 7.5. The form factor of internal separation of low-voltage switchgear and ~~control gear~~ controlgear assemblies is to be in accordance with IEC 61439-2: *Low-voltage switchgear and ~~control gear~~ controlgear assemblies — Part 2: Power switchgear and ~~control gear~~ controlgear assemblies*, or an alternative acceptable and relevant ~~n~~National Standard. The form factor is to be stated, and the arrangement plans are to show how the form factor has been achieved.

1.6 Definitions

1.6.5 A 'switchboard' is a switchgear and ~~control gear~~ controlgear assembly for the control of power generated by a source of electrical power and its distribution to electrical consumers.

1.6.6 A 'section board' is a switchgear and ~~control gear~~ controlgear assembly for controlling the supply of electrical power from a switchboard and distributing it to other section boards, distribution boards or final sub-circuits.

1.19 Programmable electronic systems

1.19.1 Where programmable electronic systems are implemented and used to control the electrical installation, or to provide safety functions in accordance with the requirements of this Chapter (e.g., electric propulsion, circuit-breaker settings, switchgear and ~~control gear~~ controlgear controllers, etc.), the arrangements are to satisfy the applicable requirements of Ch 1,2.10 to 2.13.

■ *Section 5*

Supply and distribution

5.2 Essential services

5.2.1 Essential services that are required by Part 5 to be duplicated are to be served by individual circuits, separated in their switchboard or section board and throughout their length as widely as is practicable without the use of common feeders, protective devices, control circuits or ~~control gear~~ controlgear assemblies, so that any single fault will not cause the loss of both services.

5.9 Motor control

5.9.4 Motor ~~control gear~~ controlgear is to be suitable for the starting current and for the full load rated current of the motor.

■ *Section 7*

Switchgear and ~~control gear~~ controlgear assemblies

7.1 General requirements

7.1.1 Switchgear and ~~control gear~~ controlgear assemblies and their components are to comply with one of the following standards amended where necessary for ambient temperature and other environmental conditions:

(a) IEC 61439: *Low-voltage switchgear and ~~control gear~~ controlgear assemblies*;

(b) IEC *62271-200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*;

(c) IEC 62271-201: *High-voltage switchgear and ~~control gear~~ controlgear — Part 201: AC insulation-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV;*

(d) IEC 60255: *Electrical relays*;

(e) acceptable and relevant National Standard.

In addition, the requirements of 7.2 to 7.19 are to be complied with.

7.3 Circuit-breakers

7.3.1 Circuit-breakers are to comply with one of the following standards amended where necessary for ambient temperature:

(a) IEC 60947-2: *Low-voltage switchgear and ~~Control gear~~ Controlgear Pt 2: Circuit-breakers*;

(b) IEC 62271-100: *High-voltage switchgear and ~~control gear~~ controlgear – Pt 100: High-voltage alternating-current circuit-breakers;*

(c) acceptable and relevant National Standard.

Type test reports to verify the characteristics of a circuit-breaker are to be submitted for consideration when required.

7.4 Contactors

Table 2.7.1 Minimum clearance distances

Nominal Voltage V	Minimum clearance (mm)			
	Main switchboards		Other switchgear and ~~control gear~~ controlgear	
	Type tested assemblies	Non-type tested assemblies	Type tested assemblies	Non-type tested assemblies
≤ 250	8	15	8	15
< 250 to ≤ 690	8	20	8	20
>690 to 1000	8	25	8	25
< 1,100	14	14	14	14
< 3,300	32	55	26	55
< 6,600	60	90	50	90
< 11,000	100	120	80	120
< 15,000	100	160	100	160

NOTE
A minimum clearance distance of 25 mm is required for busbars and other bare conductors in main switchboards.

7.5 Creepage and clearance distances

7.5.1 The shortest distances between conductive parts and between conductive parts and earth in air or along the surface of an insulating material are to be suitable for the rated voltage, having regard to the nature of the insulating material and the transient over voltages developed by switching and fault conditions. This requirement may be satisfied by subjecting each assembly type to an impulse voltage test in accordance with its constructional Standard or, alternatively, maintaining the minimum distances for bare conductive parts in switchgear and ~~control gear~~ controlgear assemblies given in Table 2.7.1.

7.5.3 Switchgear and ~~control gear~~ controlgear assemblies for rated voltages up to and including 1 kV are to have creepage distances in accordance with IEC 60092-302, *Electrical installations in ships – Part 302: Low-voltage switchgear and ~~control gear~~ controlgear assemblies*, and Table 2.7.2.

7.5.4 For switchgear and ~~control gear~~ controlgear assemblies for rated voltages up to and including 1 kV, a minimum creepage distance of 16 mm is permitted for type tested assemblies. The type tests are to include verification of the degree of protection, insulation material group and creepage and clearance distances in accordance with IEC 61439-1, *Low-voltage switchgear and ~~control gear~~ controlgear assemblies – Part 1: General Rules*.

Table 2.7.2 Minimum creepage distances

Nominal Voltage V	Minimum creepage distance (mm)	
	Main switchboards	Other switchgear and ~~control gear~~ controlgear
≤ 250	20	20
> 250 to ≤ 690	25	25
> 690 to 1000	35	35
< 3,300	48	35
< 6,600	90	70
< 11,000	150	120
≤ 15,000	150	120

NOTE
A minimum creepage distance of 16 mm is permitted for type tested assemblies for rated voltages up to and including 1 kV, *see* 7.5.4.

7.5.5 Switchgear and ~~control gear~~ controlgear assemblies for rated voltages above 1 kV are to have creepage distances in accordance with IEC 60092-503, *Electrical installations in ships – Part 503: Special features – AC supply systems with voltages in the range of above 1 kV up to and including 15 kV*. In the absence of alternative proposals including supporting design rationale, the distances stated in Table 2.7.2 are to be used, *see also* 1.3.4.

7.5.6 For switchgear and ~~control gear~~ controlgear assemblies for rated voltages up to and including 1 kV, the type testing stated in Table 2.7.1 is to include verification of the degree of protection in accordance with a relevant International or National Standard.

7.16 Position of switchboards

7.16.5 For switchgear and ~~control gear~~ controlgear assemblies, for rated voltages above 1 kV, arrangements are to be made to protect personnel in the event of gases or vapours escaping under pressure as the result of arcing due to an internal fault. Where personnel may be in the vicinity of the equipment when it is energised, this may be achieved by an assembly that has been tested in accordance with Annex A of IEC 62271-200 and qualified for classification **IAC** (internal arc classification).

7.18 Testing

7.18.5 For switchgear and ~~control gear~~ controlgear assemblies, for rated voltages above 1 kV, type tests are to be carried out, in accordance with Annex A of IEC 62271-200 and **IAC** (internal arc classification) assigned, to verify that the assembly will withstand the effects of an internal arc occurring within the enclosure at a prospective fault level equal to, or in excess of, that of the installation.

7.19 Disconnectors and switch-disconnectors

7.19.1 Disconnectors, switch-disconnectors and their components are to comply with one of the following standards, amended where necessary for ambient temperature and other environmental conditions:

(a) IEC 60947-3: *Low-voltage switchgear and ~~control gear~~ controlgear Part 3: switches, disconnectors, switch-disconnectors and fuse combination units*;

(b) IEC 62271-102: *High-voltage switchgear and ~~control gear~~ controlgear – Pt 102: High-voltage alternating current disconnectors and earthing switches*;

(c) acceptable and relevant National Standard.

Type test reports to verify the characteristics of a disconnector or switch-disconnector are to be submitted for consideration when required.

■ *Section 9*
Rotating machines

9.1 General requirements

9.1.1 Rotating machines are to comply with the relevant parts of IEC 60092, or an acceptable and relevant National Standard, and the requirements of this Section.

Part 7, Chapter 11
Arrangements and Equipment for Environmental Protection (ECO Class Notation)

CORRIGENDUM

■ *Section 3*
Supplementary characters

3.1 Hull anti-fouling systems – A character

3.1.1 For assignment of the **A** character, the anti-fouling system applied to the ship’s hull is to be listed as ~~non-biocidal or~~ biocide-free in the Lloyd’s Register List of Approved Products.

Part 7, Chapter 15

Requirements for Machinery and Engineering Systems of Unconventional Design

CORRIGENDUM

■ *Section 1*

Requirements for machinery and engineering systems of unconventional design

1.1 General – Scope and objectives

1.1.1 Consistent with the aims of the IMO guidelines for Formal Safety Assessment (~~MSC/Circ.1023~~ MSC-MEPC.2/Circ.12), the requirements of this Section aim to ensure that risks to maritime safety and the environment, stemming from the introduction of machinery or engineering systems of unconventional design, are addressed insofar as they affect the objectives of classification.

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